

USER`S MANUAL

(Please read carefully before operation)

ANDELI

Please read first

Thank you for purchasing our welder products!

If you can correctly install and use the equipment, it will be of great benefit to your safety and that of others. Please do not install, use or repair the equipment without carefully reading the instructions.

Date of purchase: _____

Welder No. : _____

Welding model number: _____

Place of purchase: _____

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Uses and characteristics

TIG cold welding machine series inverter DC gas shielded welding machine set manual welding, common argon arc welding, cold welding, cleaning four functions, it can realize the welding of carbon steel, stainless steel, copper, titanium and other materials. Due to the ideal static and external characteristics of this series of welders, property and good dynamic characteristics, control function is relatively complete, so it shows the following characteristics:

- IGBT high frequency soft switching conversion, high efficiency, small volume, light weight;
- The advanced control scheme significantly improves the performance of the welder and meets the welding process requirements to a greater extent;
- MMA welding, common TIG welding, cold welding, cleaning machine for multiple purposes;
- Cold welding is suitable for spot welding of thin plates, and the workpiece does not change color;
- Cleaning function, cleaning common argon arc welding workpiece color;
- Easy arc starting, stable arc and high welding quality;
- Hand arc welding has small spatter, stable current, high reliability and good weld formation;
- Digital panel adjustment, complete functions, multi-parameter adjustment;

Safety Precautions




General safety precautions


- Please be sure to observe the precautions stipulated in this manual, otherwise accidents may occur.
- For the design and construction of input power supply, the selection

of installation site, and the use of high-pressure gas, please follow the relevant standards.


- Unrelated personnel should not enter the welding site.
- Please have qualified personnel to install, repair, maintain and use the welding machine.
- The welding machine must not be used for purposes other than welding (such as charging, heating, pipe thawing , etc.).
- If the ground is uneven, pay attention to prevent the welding machine from tipping over.

 **Prevent electric shock or burns**

- Do not touch live parts.
- Professional electricians are required to ground the welding machine with copper wires of specified cross section.
- Professional electricians are required to connect the welding machine to the power supply with the copper wire of the specified cross section, and the insulation sheath shall not be damaged.
- When working in a humid place with limited activity, ensure the insulation between the body and the base material.
- When working at heights, use a safety net.
- When not in use, please turn off the input power.

 **Avoid the harm of welding smoke and gas to human body**

- Please use the prescribed exhaust equipment to avoid accidents such as gas poisoning and suffocation.
- When working on the bottom of the container, protective gas will be deposited around, causing suffocation. Special attention should be paid to ventilation.

 **Avoid the harm of welding arc light, spatter and welding slag to human body.**

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- Please wear protective glasses with sufficient shading. Arc light can cause eye irritation, spatter and welding slag can burn the eyes.
 - Please use leather protective gloves for welding, long-sleeved clothes, hats, foot protectors, apron and other protective equipment to avoid arcing, splash and welding slag burns and skin burns.



Prevent fire, explosion, rupture and other accidents

- No combustible materials should be placed in the welding place. Splashes and hot welding seams can cause fire.
- The welding cable and the base material must be connected and fastened, otherwise it will cause heat and cause a fire.
- Please do not weld in flammable gas or on container containing flammable substances, otherwise it may cause an explosion.
- Do not weld the closed container, otherwise it will break.
- Fire extinguishers should be prepared in case.



Prevents rotating moving parts from injuring people

- Do not put your fingers, hair, clothes, etc. near rotating parts such as cooling fans and wire feed wheels.
- When feeding the welding wire, please do not put the end of the welding torch close to the eyes, face and body to avoid the welding wire from hurting people.



Prevent the gas cylinder from falling down and the gas regulator from rupturing

- Cylinders should be securely fixed, and dumping may cause personal accidents.
- Do not place the gas cylinder in high temperature or sunlight.
- When opening the cylinder valve, keep your face away from the gas outlet to avoid hurting people with high-pressure gas.
- Please use the gas regulator supplied or recommended by our company,

and observe its usage regulations.



To prevent the welding machine from hurting people during sports

- When using a forklift or crane to transport the welding machine, personnel should not be under the welding machine and in front of the movement to prevent the welding machine from falling and being injured.
- When hoisting, the rope should be able to withstand sufficient tension and not be broken. The angle of the rope at the hook should not exceed 30 ° .

EMC precautions

1、 Overview

Welding can cause electromagnetic interference.

By adopting appropriate installation methods and correct methods of use, the interference emission of arc welding equipment can be minimized. The products described in this manual are Class A equipment (applicable to all occasions except residential areas powered by public low-voltage power systems)

Warning: Class A equipment is not suitable for residential buildings powered by public low-voltage power supply systems. Due to conducted and radiated disturbances, it is difficult to guarantee electromagnetic compatibility in these places.

2、 Environmental assessment recommendations

Before installing arc welding equipment, users should evaluate potential electromagnetic disturbance problems in the surrounding environment. The considerations are as follows:

- (1) Are there other power supply cables, control cables, signal and telephone lines above and around the arc welding equipment;
- (2) Whether there are broadcasting and TV transmitting and receiving equipment;
- (3) Whether there are computers and other control equipment;

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- (4) Whether there is high-security equipment, such as industrial protective equipment;
 - (5) Consider the health of the surrounding staff, such as those without hearing aids and those with pacemakers;;
 - (6) Is there any equipment for calibration or testing;
 - (7) Pay attention to the noise immunity of other surrounding equipment. Users should ensure that other devices used around them are compatible, which may require additional protective measures;
 - (8) Time for welding or other activities.

The scope of the environment considered depends on the building structure and other possible activities, which may exceed the boundaries of the building itself.

3、Ways to reduce emissions

(1) Public power supply system

Arc welding equipment should be connected to the public power supply system in the manner recommended by the manufacturer. If interference occurs, additional precautions should be taken, such as access to the filter in the public power supply system. For the fixed installation of arc welding equipment, the shielding of the power supply cable should be considered. Metal pipes or other equivalent methods can be used for shielding. The shielding must maintain electrical continuity. The shielding layer should also be connected to the welding power supply shell to ensure good electrical contact between the two.

(2) Maintenance of arc welding equipment

Arc welding equipment should be routinely maintained according to the method recommended by the manufacturer. When the welding equipment is in operation, all entrances, auxiliary doors and covers on the equipment should be closed and properly tightened. Arc welding equipment should not be modified in any form, unless there are corresponding changes and

adjustments in the instructions. In particular, the spark gap of the arc starting and stabilizing device must be adjusted and maintained according to the manufacturer's recommendations.

(3) Welding cable

Welding cables should be as short as possible and close to each other, close to or close to the ground.

(4) Bonding of equal potentiometers

Be sure to pay attention to the overlapping of all metal objects in the surrounding environment. The overlapping of metal objects and workpieces will increase the risk of work. When the operator touches these metal objects and electrodes at the same time, there may be electric shock. The operator should be insulated from all these metal objects.

(5) Workpiece grounding

For reasons such as electricity safety or the position and size of the workpiece, the workpiece may not be grounded, such as the hull or steel frame of the building. The connection between the workpiece and the ground sometimes reduces the emission, but this is not always the case, so it is necessary to prevent the increased risk of electric shock to the user or damage to other electrical equipment caused by the workpiece grounding. When necessary, the workpiece should be directly connected to the ground, but in some countries it is not allowed to be directly grounded, and it can only be achieved by selecting an appropriate capacitor according to the regulations of the country where it is located.

(6) shield

Selective shielding of surrounding equipment and other cables can reduce electromagnetic interference. For special applications, consider shielding the entire welding area.

Main technical information

1、The main technical parameters

MODEL		TIG-250MGLC	
Function		TIG	MMA
Power Supply Voltage (V)		AC220V ± 15%	
Frequency (Hz)		50/60	
No-Load Voltage (V)		56	
Rated Input Power (KW)		4.1	5.6
Rated Input Current (A)		18.5	25.3
Welding Current Range (A)		5-170	10-150
Duty cycle (% 40°C 10min)	40%	170A/16.8V	150A/26V
	100%	108A/14.3V	95A/23.8V
Power Factor		0.7	
Efficiency (%)		85	

(For hidden parameters, please refer to the parameter table below)

Welder installation

1. Installation Environment

- (1) The welding operation should be carried out in a relatively dry environment. The relative humidity of the air should not exceed 90% at 20 ° C and 50% at 40 ° C.
- (2) The ambient temperature during welding should be between -10 ° C and + 40 ° C, and between -20 and + 55 ° C during storage and transportation.
- (3) Avoid use in direct sunlight or in the rain in the open air, and do not allow rainwater to penetrate into the welding machine.

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- (4) Avoid gas shielded welding operations in environments with strong air flow.
 - (5) The inclination of the welding power source should not exceed 10°, and the altitude should not exceed 1000m.
 - (6) Avoid working in the environment with large dust, acid and corrosive gas.
 - (7) The welding machine is more than 20cm away from the wall, and the distance between the welding machine is more than 10cm.

2. Supply voltage quality

- (1) The waveform should be a standard sine wave, the effective value is 220V±15%, and the frequency is 50Hz / 60Hz.

3. Power input

Model		TIG-250MGLC
Input power		AC220V± 15%, 50/60Hz
Grid minimum capacity		10
Input protection	fuse	63
	breaker	63
Cable	Input side	4mm ²
	Output side	25mm ²
	Ground wire	4mm ²

In the above table, the squares of the input, output, and ground wires increase correspondingly with the longer cable length.

Note: The capacities of fuses and circuit breakers in the above table

are for reference only.

4. Equipment installation

The input power of this series of welding machine is single-phase 220V / 50Hz alternating current. The user should have a corresponding power distribution board or cabinet, and should be equipped with an automatic air switch or an iron shell switch, and the ground connection should be reliable.

4.1 Use of MMA welding:

- ① Reliable access to welding cables;
- ② Close the power switch of the arc welding power supply;
- ③ Connect the input cable to the switchboard and close it.

4.2 Common TIG welding and cold welding:

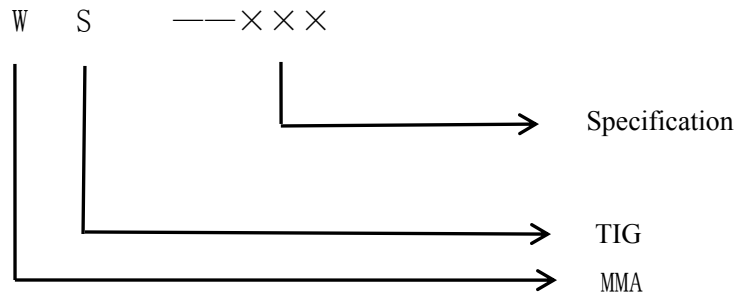
- ① The welding torch is reliably connected to the negative electrode of the welding machine, and the workpiece clamping wire is reliably connected to the positive electrode of the welding machine;
- ② Reliably connect the trachea and air source;
- ③ Turn on the power switch of the welding machine;
- ④ Connect the input cable to the switchboard and close it.

4.3 Cleaning use:

- ① The cleaning gun is connected to the negative electrode of the welding machine, and the work clamp wire is reliably connected to the positive electrode of the welding machine;
- ② Close the power switch of the welding machine;
- ③ Connect the input cable to the switchboard and close it.

Model compilation and description

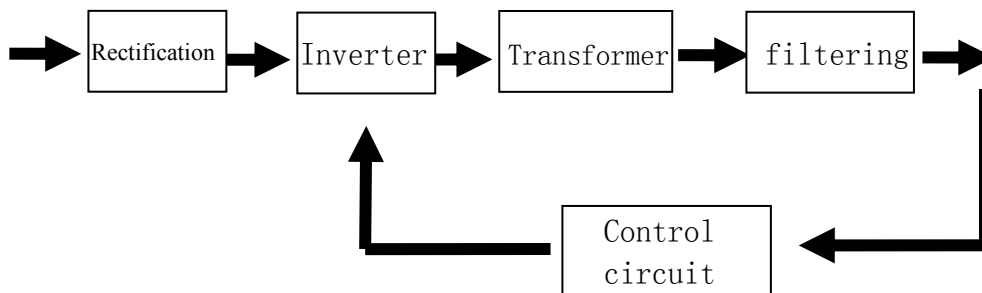
Model compilation and description of TIG series welding machine are shown in Figure 1:



(Figure 1) Model compilation and description of TIG series welding machine

Brief principle

The schematic diagram of TIG series welding machine is shown in Figure 2:



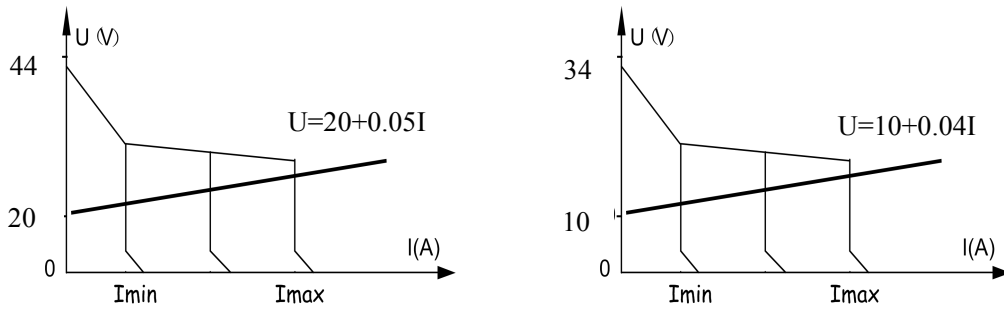
(Figure 2) Welding machine schematic

This welding machine adopts IGBT high-frequency inverter technology, power frequency 220V power input, directly rectified and sent to the inverter composed of IGBT and other devices to become high-frequency AC, and the high-frequency AC obtained after the inverter passes through the high-frequency transformer. After stepping down, the high-frequency rectifier rectifies and filters and outputs a DC current suitable for welding. Through this process, the dynamic response of the welding machine is improved, the volume and weight of the transformer and reactor are reduced, and the efficiency of the whole machine is improved.

The design of the control circuit enables the welding machine to always

achieve good welding process performance when the external conditions change (such as grid voltage fluctuations and output cable lengths are different). It is easy to start the arc, the arc is stable, the welding seam is well formed, and the welding current can be continuously adjusted.

The output characteristics of TIG series welding machine are shown in Figure 3:



(Figure 3a)MMA output characteristics (Figure 3b)TIG output characteristics

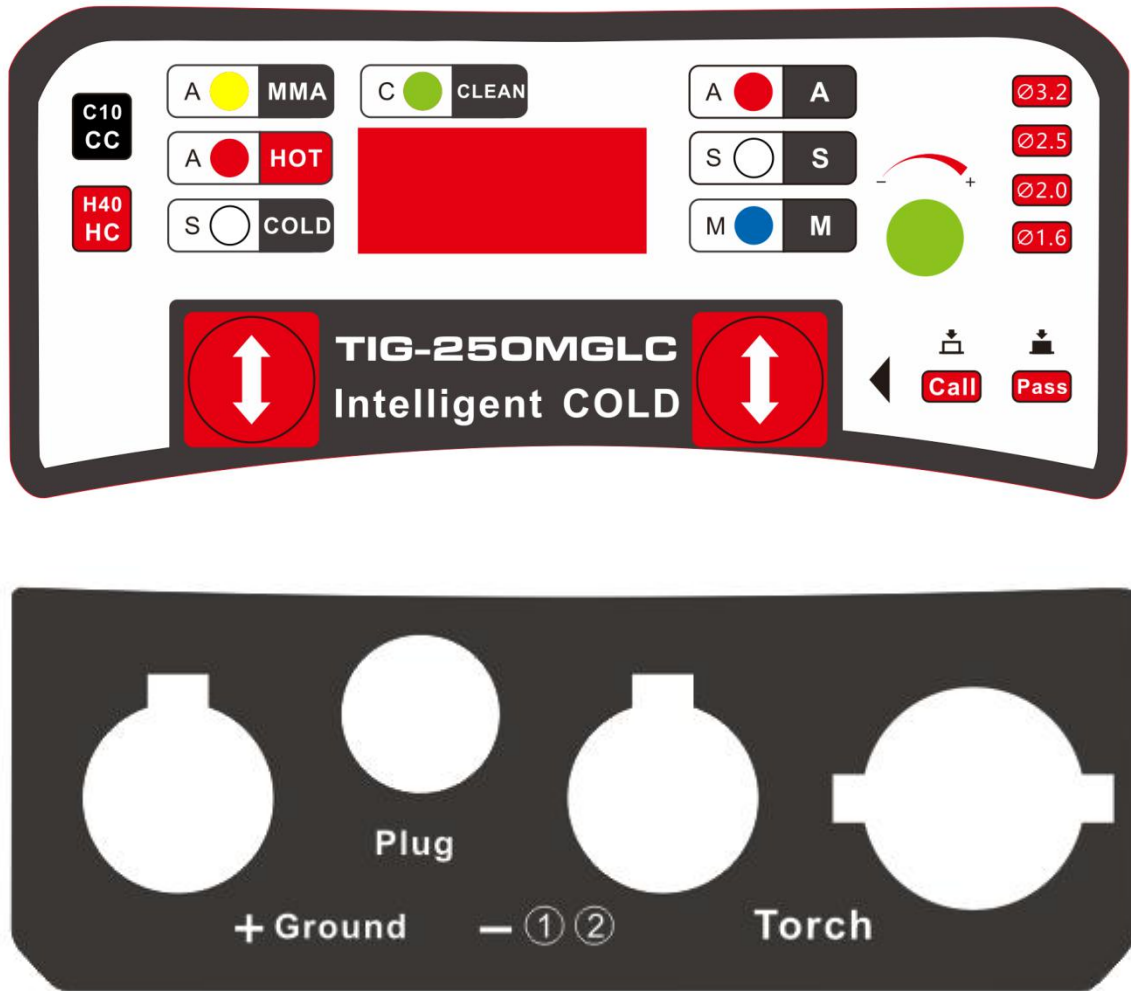
Static external characteristics of MMA welding and TIG welding: drop characteristics.

Operating instructions

1. Features

1. Welder panel

The panel of the welding machine is shown in figure (4), which is used for the function selection, parameter setting and welding output interface of the welding machine.



(图 4) TIG-250MGLC(two functions)panel diagram

1.1.1 TIG-250GC function selection and parameter setting

- ① First button:  (First from left)

焊接功能选择按钮。

- ② Second button:  (Second from left)

Parameter selection button.

- ③ Parameter value adjustment knob:

Adjust the value of each parameter.

- ④ Digital Tube: 

Display the value of each parameter.

⑤ Welding function instruction



MMA;



TIG;



Cold welding, suitable for spot welding of thin plates;



Cleaning, cleaning the color of the workpiece after ordinary TIG welding;

⑥ Parameter indication



Display the current value of hot welding and cleaning;



Display TIG welding current time 1-250ms;



C0-5 can store self-adjusting parameters for TIG welding, and C6-9 built-in parameters;

Hot welding: C6-spot welding 0.8mm board; C7-spot welding 1.0mm board; C8-spot welding 1.5mm board; C9-spot welding 3.0mm board.

1.1.2 Protection code

① Display 0C, welding machine overheat and overcurrent protection;

1.1.3 Welding output interface

From left to right:

① Positive output fast socket: connect the welding clamp wire during manual welding; connect the work clamp wire during hot welding, cold welding and cleaning;

② Welding torch switch: connect to argon arc welding torch and cleaning gun switch;

③ Negative output fast socket: connect the work piece clamp wire during manual welding; connect the cleaning gun fast plug during cleaning;

④ Negative output gas-electric connector: hot-gas welding and cold-welding gas-electric connector for argon arc welding torch;

(The parameters of the same type cold welding machine are the same as above, not listed)

2. Installation method:

Note: Please strictly follow the steps below for installation and commissioning!

The electrical connection operation must be performed after turning off the power switch of the distribution box!

The protection grade of this equipment is IP21, and it should be avoided in rain!

- ① Connect the welding input power line to the corresponding voltage level and $\geq 60\text{A}$ circuit breaker (connect the ≥ 4 square power line);
- ② The input power line should be in good contact with the corresponding power terminal or switch to prevent oxidation;
- ③ Use a multimeter to measure whether the input voltage is within the fluctuation range;
- ④ Connect the yellow-green wire on the power cord and the grounding screw on the rear panel to ≥ 4 square wires and ground them well;
- ⑤ If the welding machine is placed on an inclined plane, the welding machine should be fixed and not allowed to slide down;
- ⑥ Each welding machine is equipped with an insulated handle, which is lifted by hand when moving the welding machine;

2.1 Hot welding (general TIG welding)

① Tightly connect the air pipe to the air inlet of the rear plate of the welding machine; the gas supply path should include a gas bottle, an argon decompression flow meter and a gas pipe, and the connection part of the gas pipe should be tightly tightened with a hose clamp to prevent leakage and air ingress.

- ② Insert the gas-electric integrated interface of the argon arc welding

torch and the welding torch switch into the corresponding positions on the panel and tighten clockwise.

③ Connect the work clamp wire to the positive quick socket (character "+ ground").

④ Set the distance between the tungsten electrode of the argon arc welding torch and the workpiece 2-4mm, press the welding torch switch to ignite the arc, the current is the set value, and you can work at this time.

**Titanium and its alloys——Parameter selection of tungsten argon arc welding
(for reference only)**

Thick ness (mm)	Bevel form	Number of weldin g layers	Tungsten diameter (mm)	Welding wire diameter (mm)	Welding current (A)	Argon flow (L/min)			Nozzle aperture (mm)
0.5		1	1.5	1.0	30-50	8-10	6-8	14-16	10
1.0	I-sha	1	2.0	1.0-2.	40-60	8-10	6-8	14-16	10
1.5	ped	1	2.0	0	60-80	10-12	8-10	14-16	10-12
2.0	groov	1	2.0-3.	1.0-2.	80-110	12-14	10-12	16-20	12-14
2.5	e	1	0	0	110-120	12-14	10-12	16-20	12-14
			2.0-3.	1.0-2.					
			0	0					
				2.0					
3.0		1-2	3.0	2.0-3.	120-140	12-14	10-12	16-20	14-18
4.0		2	3.0-4.	0	130-150	14-16	12-14	20-25	18-20
5.0	Y-sha	2-3	0	2.0-3.	130-150	14-16	12-14	20-25	18-20
6.0	ped	2-3	4.0	0	140-180	14-16	12-14	25-28	18-20
7.0	groov	2-3	4.0	3.0	140-180	14-16	12-14	25-28	20-22
8.0	e	3-4	4.0	3.0-4.	140-180	14-16	12-14	25-28	20-22

			4.0	0 3.0-4. 0 3.0-4. 0					
10		4-6	4.0	3.0-4.	160-200	14-16	12-14	25-28	20-22
20	Doubl e	12	4.0	0	200-240	12-14	10-12	20	18
22		12	4.0	4.0	230-250	15-18	18-20	18-20	20
25	Y-sha ped groov e	15-16	4.0	4.0-5.	200-220	16-18	20-26	26-30	22
30		17-18	4.0	0	200-220	16-18	20-26	26-30	22
					3.0-4. 0 3.0-4. 0				

Stainless steel sheet-parameter selection of tungsten argon arc welding (for reference only)

Thickness (mm)	Connector form	Tungsten diameter (mm)	Welding wire diameter (mm)	Current type	Welding current (A)	Argon flow (L/min)	Welding speed (cm/min)
1.0	Docking	2	1.6	DC positive	7-28	3-4	12-47
1.2	Docking	2	1.6	DC positive	15	3-4	25
1.5	Docking	2	1.6	DC positive	5-19	3-4	8-32

Aluminum and its alloys—Parameter selection of argon tungsten arc welding (for reference only)

Thickness (mm)	Beve l form	Number of welding layers	Tungsten diameter (mm)	Wire diamete r (mm)	pre-heat temperat ure (°C)	Welding current(A)	Argon flow (L/min)	Nozzle aperture (mm)
1.5	I-s	1/0	2	1.6-2	-	50-80	7-9	8

2	hap ed gro ove	1/0	2-3	2-2.5	-	50-80	8-12	8-12
3		1/0	3	2-3	-	150-180	8-12	8
4		1-2/1	4	3	-	180-200	10-15	8-12
5		1-2/1	4	3-4	-	180-240	10-15	8-12
8	Y-s	2/1	5	4-5	100	260-320	16-20	10-12
10	hap	3-4/1-2	5	4-5	100-15	280-340	16-20	14-16
12	ed	3-4/1-2	5-6	4-5	0	300-360	18-22	14-16
16	gro	4-5/1-2	6	5-6	150-20	340-380	20-24	16-20
20	ove	4-5/1-2	6	5-6	0	360-400	25-30	20-22
					200-22			
					0			
					200-26			
					0			
16-20	Dou	2-3/2-3	6	5-6	200-26	300-380	25-30	16-20
22-25	ble	2-3/2-3	6-7	5-6	0	360-400	30-35	20-22
	Y-s				200-26			
	hap				0			
	ed							
	gro							
	ove							

2.3 Cleaning

① Connect the quick plug of the cleaning gun to the negative quick socket, insert the welding gun switch, and tighten it clockwise;

② Connect the work clamp wire to the positive quick socket (character "+ ground");

③ After dipping the cleaning gun with the cleaning liquid, contact the discolored welding seam, press the welding gun switch to ignite the arc, the current is the set value, and you can work at this time.

④ Current value C5-C10 brush-type cleaning gun for washing thin plates, H11-40 cloth-type cleaning gun for washing thick plates.

Precautions and maintenance of welding machine

1. Safety points

The welding machine is equipped with overcurrent and overheat protection circuits. When the grid voltage, output current and internal temperature exceed the set standard, the welding and cutting machine will automatically stop working, but excessive use (such as excessive voltage) will still cause welding The machine is damaged, so you still need to pay attention to the following:

① Ensure good ventilation!

When the machine is in operation, there is a large working current passing through, and natural ventilation cannot meet the cooling requirements of the welding machine, so a fan is built in to effectively cool the welding machine to make it work smoothly. The user should confirm that the ventilation place is not covered or blocked, and the distance to the surrounding objects should not be less than 0.3 meters. The user should always pay attention to maintain good ventilation, which is very important for the welding machine to work better and ensure a longer life of.

② No overload!

The user should pay attention to the use of the welding machine according to the allowable load continuity rate (refer to the welding machine nameplate parameters) to keep the welding current not exceeding the maximum allowable load current. Current overload will significantly shorten the service life of the welding machine, and may even burn the welding machine. Load continuity rate: the current welding time corresponding to the load continuity rate, 10 minutes is a cycle, working time + rest time = 10 minutes; for example, 30%, 200A / 28V, that is, output current 200A, it should work for 3 minutes 7 minutes rest; 60%, 141A / 25.6V, output current 141A, should work 6 minutes, rest 4 minutes.

Current overload will significantly shorten the service life of the welding machine,

and may even burn the welding machine.

③ Prohibit high voltage !

The power supply voltage is listed in the "main performance parameters" table. Under normal circumstances, the automatic voltage compensation circuit in the welding machine will ensure that the welding current is kept within the allowable range. If the power supply voltage exceeds the allowable value, the welding machine will be damaged. The user should fully understand this situation and take corresponding preventive measures.

④ It is forbidden to use the welding machine for thawing.

⑤ A ground screw is attached to the back of each welder and marked with a ground mark. Before use, select a cable with a cross section greater than 4mm², and reliably ground the welding machine shell to discharge static electricity or prevent accidents that may occur due to leakage.

⑥ If the welding machine exceeds the standard load continuity rate, the welding machine may suddenly enter the protection state and suspend work. This means that the welding machine exceeds the standard load continuity rate. If the temperature is too high, the temperature control switch will be triggered to stop the welding machine. The yellow indicator light on the front panel lights up. In this case, you do not have to unplug the power plug, so that the cooling fan can continue to cool the welder. When the yellow indicator light goes out, the temperature drops to the standard range and welding can be restarted.

2. Maintenance and care



caveat:

All maintenance and repair work must be performed with the power supply completely cut off. Please confirm that the power plug has been unplugged before opening the cabinet.

① Remove dust regularly, and clean it regularly with dry, clean compressed air. Generally, welding machines are used at least once a month when using welding machines in smokey and polluted air.

② Compressed air should be reduced to a reasonable pressure to avoid


damage to the components in the welding and cutting machine.

③ Check the internal electrical connection to confirm good contact (especially the connector), strengthen the loose contact, if there is oxidation, remove the oxide film with sandpaper and reconnect.

④ Avoid water or moisture in the welding and cutting machine, otherwise blow dry in time, use a megohmmeter to measure the insulation (including between the connection nodes and between the connection points and the chassis). Only if it is confirmed that there is no abnormal situation, the welding work can be continued.

⑤ If the welding machine is not used for a long time, the welding and cutting machine should be placed in the original packaging and stored in a dry environment.

Before overhaul

	<p>caveat:</p> <p>Blind experiments and careless maintenance may lead to the expansion of the fault area, and give formal maintenance. Cause difficulty. The exposed part of the device is under a live voltage with dangerous voltage. Any direct or indirect contact may cause an electric shock accident. Serious electric shock will lead to death! ! !</p>
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Note: During the warranty period, if the company does not allow the user to arbitrarily overhaul any malfunction of the welding machine used by the user, the free repair guarantee provided by the supplier will be invalid.